

IN THE SPECIFICATION

Add a new paragraph at page 1, after the title and insert new section headings and subheading as follows:

CROSS REFERENCE TO RELATED APPLICATION

This application is a national phase application based on PCT/IT2003/000707, filed October 31, 2003, the content of which is incorporated herein by reference.

BACKGROUND OF THE INVENTION

Field of the Invention

Page 1, before line 16, add the following new subheading:

Description of the Related Art

Page 3, before line 23, add the following new section heading:

SUMMARY OF THE INVENTION

Page 5, lines 1-11, delete the three (3) paragraphs starting with "It is therefore an object of the invention..." and ending with "...as defined in claims 32 and 34 respectively." in their entirety and substitute new paragraphs therefor as follows:

In accordance with the present invention, there is provided an expandable bladder for tyre-vulcanising apparatuses, having a toroidal conformation comprising:

at least one first layer of a first elastomer material and one second layer of a second elastomer material different from said first elastomer material;

wherein said second layer is at a position radially external to said first layer;

wherein said first and second layers have an undulated interface profile;
and

wherein said interface profile defines mechanical-engagement elements between the first and second elastomer materials.

There is also provided in accordance with the present invention, a method of manufacturing an expandable bladder for tyre-vulcanising apparatuses, comprising the steps of:

preparing at least one first elongated element including a first raw elastomer material and at least one second elongated element including a second raw elastomer material having a different composition from that of the first elastomer material;

laying said first elongated element on said toroidal support in the form of coils wound around a geometric axis of said toroidal support so as to form a first layer of said first elastomer material;

laying said second elongated element on a toroidal support in the form of coils wound around the geometric axis of said toroidal support so as to form a second layer of said second elastomer material at a radially external position to said first layer, said first and second layers having an undulated interface profile wherein said interface profile defines mechanical-engagement elements between the first and second elastomer materials; and

vulcanising said bladder.

In another aspect of the present invention, there is provided a process for manufacturing tyres comprising the steps of:

building a green tyre;

inserting said green tyre into a mould;

supplying heat to said green tyre to obtain cross-linking of the elastomer material of which it is made;

moulding said green tyre against the walls of said mould through expansion of an expandable bladder placed within said tyre when the latter is enclosed in said mould; and

extracting the moulded and vulcanised tyre from said mould wherein said expandable bladder has a toroidal conformation and comprises:

at least one first layer of a first elastomer material and one second layer of a second elastomer material different from said first elastomer material;

wherein said second layer is at a position radially external to said first layer;

wherein said first and second layers have an undulated interface profile; and

wherein said interface profile defines mechanical-engagement elements between the first and second elastomer materials.

In accordance with the present invention, there is also provided a vulcanisation apparatus for tyres of vehicle wheels, comprising:

a mould having a plurality of cheeks and sectors adapted to define, by moulding, a tread pattern on the tread band of the tyre and a plurality of graphic marks on the sidewalls of the same tyre;

devices to supply heat to the green tyre to be vulcanised to enable cross-linking of the latter, said devices being operatively associated with said mould; and

an expandable bladder operatively associated with said mould to exert pressure from the inside to the outside on said green tyre bringing said green tyre into contact with said cheeks and sectors of said mould during the moulding step, wherein the expandable bladder has a toroidal conformation and comprises:

at least one first layer of a first elastomer material and one second layer of a second elastomer material different from said first elastomer material;

wherein said second layer is at a position radially external to said first layer;

wherein said first and second layers have an undulated interface profile; and

wherein said interface profile defines mechanical-engagement elements between the first and second elastomer materials.

Page 5, before line 13, add the following new section heading:

BRIEF DESCRIPTION OF THE DRAWINGS

Page 6, before line 25, add the following new section heading:

DETAILED DESCRIPTION OF THE INVENTION